



Status of ENDF

Gustavo Nobre, Dave Brown

November 8th, 2021



2021 Nuclear Data Week(s) - USNDP

- GitLab: <u>git.nndc.bnl.gov</u>
- Meetings since last Nuclear Data Week: mini-CSEWG
- Next ENDF Release
- Updates in the ENDF library since last NDW
- Next ENDF format



Before we start... 2020 CSEWG Minutes

Nuclear Data Week 2020 (CSEWG-USNDP-NDAG)

November 30, 2020 to December 4, 2020 Online

Overview	CSEWG Minutes
Timetable Contribution List Speaker List My Conference	Meeting minutes from the CSEWG sessions BROOKHAVEN NATIONAL LABORATORY BNL-221549-2021-INRE
 My Contributions Registration Participant List 	2020 Virtual CSEWG Meeting Minutes
Online meeting protocol	G. NOBRE
CSEWG Minutes	May 2021
Support	Nuclear Science and Technology Department Brookhaven National Laboratory
LKrejci@bnl.gov ahayes@bnl.gov bshu@bnl.gov	U.S. Department of Energy USDOE Office of Science (SC), Nuclear Physics (NP) (SC-26) Notice: This manuscript has been authored by employees of Brookharen Science Associates, LLC under Contract No.DE-SC0012704 van the U.S. Department of Energy. The publisher by according the manuscript for publication



https://indico.bnl.gov/event/7233/page/354-csewg-minutes

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GitLab is fully operational!

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National Nuclear Data Center

The U.S. nuclear data community working together to continuously advance the state of nuclear data for science and technology applications.

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Username or email	
Password	
Remember me	Forgot your password?
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USNDP Collaboration Platform

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Users need approved GIS

Sign in

Username or email

Remember m

Password

- Cyber Security training
- Reach out to Gustavo (gnobre@bnl.gov) or Dave (dbrown@bnl.gov)

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I.	The ENDF library project itself. available as an archived projec	At the time of creation of this project named "svn-export".	et area, ENDF	⁻ comprises 15 sublibra	ries. The	full ENDF/B	history is						
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and uploaded

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- Virtual
- DOE/SC PuRe initiative and ENDF implications
- Contributions for neutron, TSL, CP & photonuclear sublibraries
- Evaluation review
- Validation
- Discussion and poll: To adjust or not to adjust?





https://indico.bnl.gov/event/12258/attachments/ 35490/61392/mini-csewg-mini-minutes-final.pdf Figure 1: Zoom group photo

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- A dataset must have a "landing page" namely a website that allows access to the dataset in question
- Metadata describing the data
- The Metadata-Landing Page-Dataset linkage submitted to OSTI (BNL's library does this last step). This linkage must be kept up to date even if either the metadata or landing page changes.
- Discussion about authorship/ownership of evaluations: GNDS can accommodate many of the needs, but details need to be sorted out



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Action Items:

- Landing Page Items:
 - Cleanup and update ENDF web area
 - Define landing page URL scheme
 - Deploy ENDF landing pages (links to ENDF & GNDS, ACE?)
- Metadata Items:
 - Gather mandatory (and optional) metadata from all ENDF files
 - Assemble JSON-formatted metadata files for automated upload (these can be used to fill the fields in the GNDS files too)
 - Pilot DOI assignment with NSR, then ENSDF and ENDF
 - Hold EG GNDS meeting(s) to both finalize metadata tags and GNDS-2.0
- Other items:
 - Publicize (and use!) the generic ENDF library manager email



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Sign in



- <section-header>
- Validation
- Discussion and or not to adjust?

Currently all ENDF/B-VIII.1 evaluations are jammed up in phase1





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We will NOT provide adjusted mean values and covariances in addition to the usual general purpose library.

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The release of ENDF/B-VIII.1 has been delayed...





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... for 1 year to Feb 2024!







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- COVID pandemic delayed many experiments: New data are expected
- Need more time to setup proper review process
- Not enough time for proper testing and validation
- Time deal with a potentially serious issue at high reactor burn-up







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TSL sublibrary

- tsl_20pGraphite, tsl-AlinAl2O3, tsl-Be-metal, tsl-Be-metal+Sd, tsl-BeinFLiBe.endf, tsl-CainCaH2.endf, tsl-CinSiC, tsl-CinUC, tsl-FinFLiBe, tsl-graphiteSd, tsl-H1inCaH2, tsl-H2inCaH2, tsl-HinCH2, tsl-HinHF, tsl-LiinFLiBe, tsl-OinAl2O3, tsl-SiinSiC, tsl-UinUC (NCSU)
- tsl-7Liin7LiD-mixed, tsl-BeinBe2C, tsl-CinBe2C, tsl-Din7LiD-mixed, tsl-Hin7LiHmixed, tsl-HinZrH2, tsl-HinZrHx, tsl-ZrinZrH2, tsl-ZrinZrHx (NNL)

- tsl-CainCaH2, tsl-HinCaH2 (from JEFF, conflict with NCSU), tsl-HinIceIh (JEFF, conflict with RPI), tsl-HinMesitylene-PhaseII, tsl-HinToluene, tsl-Mg, tsl-Si (JEFF nonconflictive)
- tsl-CinC5O2H8, tsl-CinCH2, tsl-HinC5O2H8, tsl-HinCH2, tsl-HinIcelh, tsl-OinC5O2H8, tsl-OinIcelh (RPI)
- tsl-CinCH2, tsl-HinCH2, tsl-HinH2O (ESS)
- tsl-HinUH3, tsl-NinUN, tsl-UinUN (ANL)



Neutron and decay sublibraries

- ⁵⁶Fe from IRSN (separate branch to not conflict with INDEN)
- 86Kr (BNL)
- ⁷⁸Se, ⁹⁷Mo, ⁹⁹Tc, ¹⁰²Pd, ¹⁰⁹Ag, ¹¹³In, ¹²⁷In, ¹³³Cs, ¹³⁴Cs, ¹³⁴Ba, ¹³⁷Ba, ¹³⁸La, ¹⁴³Pr, ¹⁴⁷Nd, ¹⁴⁷Pm, ¹⁵³Sm, ¹⁵⁵Eu, ¹⁶⁰Gd, ¹⁵⁹Tb, ¹⁶⁶Er, ¹⁶⁸Er, ¹⁷⁰Er, ¹⁷⁵Lu, ¹⁷⁶Lu, ¹⁷⁴Hf, ¹⁷⁶Hf, ¹⁷⁷Hf, ¹⁷⁸Hf, ¹⁷⁹Hf, ¹⁸⁰Hf (RQW + BNL)
- ¹⁰³Rh (RPI)
- 106,108,110,111,112,114,116Cd (LANL)
- 233,235U (INDEN)

- Format fixes from Paul Romano (whole sublibrary)
- ⁹⁸Zr, ⁵⁶Ba, ⁵⁸Ce (BNL Lorek)

Files need to be reviewed, conflicts resolved, so they can be sent to Phase 2, validated, and finally, become a beta version of ENDF/B-VIII.1



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GNDS-2.0 status

- GNDS-2.0 slated for final approval in Fall 2021 WPEC meeting
- Major changes:

Brookhaven

National Laboratory

- <map> format
- <documentation> format supporting metadata for DOI assignment
- Major TNSL rewrite: mixed moderators & covariance support
- Met all SG-38 requirements
- Expect final version of specifications in May 2022 WPEC meeting



What's next

• Expect major format changes post-GNDS-2.0:

- Synchronize nuclear structure formats with ENSDF as part of ENSDF modernization
- Revamp uncertainty/covariance to make more ML friendly
- Atomic data additions
- FPY formats per FIRE collaboration/CSEWG recommendations
- Re-envisioning of URR probability distributions

• ENDF to GNDS transition:

- ENDF/B-VIII.0 released in GNDS-1.9
- Expect at least next release to be in both ENDF-6 and GNDS formats
- Transition is slow; we must walk together and we can only go as fast as the slowest among us

• EG-GNDS Transition:

• This is Dave Brown's last version as Expert Group chair, in May 2022 we will elect new chair

